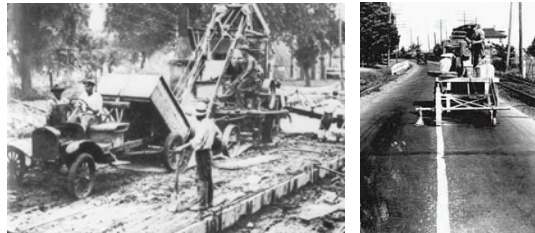




Session 3: THE HISTORY OF AMERICAN ROAD BUILDING



If you like history (and, during the classroom sessions, about 3% of MDOT employees said they did), you'll *really* like this session. If you don't like history, we suggest that you review this session anyway. Don't worry; our point isn't so much to discuss dates as to put CSS into an historical context.

Many people who have seen this program have said that CSS is nothing new—MDOT has been doing it for years. We couldn't agree more. In fact we would like to show you that many of the principles of CSS are about 150 years old. . . .

So why all the fuss if CSS is something you and the department have been doing already? The problem is that as a department, we haven't been methodical about it. We haven't used all of the principles at the same time and to the same level of effort.

Some projects may include an interdisciplinary team but not multi-modal concerns. Sometimes and in some places, stakeholder involvement has been all the rage, but an interdisciplinary team wasn't even considered. Sometimes, designers may ask peers in maintenance or construction to review a set of plans, when they really should have asked them to help develop the plans in the first place.

We have done many things right as a department and as a state, but we still can do better. Understanding where we came from may help us improve.



American Road Building Eras

- The 19th Century
- The 20th Century
- The 21st Century



As part of understanding the historical context of CSS, we will examine three distinct eras of road building in our nation's history:

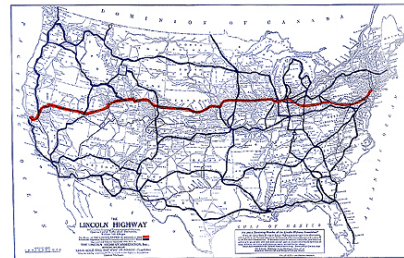
1. The early roads in 19th century America
2. The federalization of roads during the 20th century
3. The context-sensitive roads of the 21st century



American Road Building Eras

The 19th Century: Participatory Road Design & Construction

- Indian and Pioneer Trails
- Military and Postal Roads
- Roads by Associations
- Multimodal



Early roads in America followed Indian trails (which probably had followed trails of migrating animals). When roads for the military and postal service were required, they were arduously surveyed and hacked out of the wilderness, like the road between Detroit and Chicago that later became US-12. But government roads were unusual in the 19th century.

Most roads and bridges at the time were constructed by local associations — groups of people with a common need and a common purpose. Associations were unique to the United States. (Europeans observed that associations were part of what made America democracy so unusual.) Some associations were defined by political boundaries, such as townships. But most were defined by a single purpose or a single social problem.

For example, a group of farmers who couldn't get to town because of a periodically swollen river formed an association. They defined the problem (we can't cross the river); they developed alternatives (a ferry or a bridge?); they selected a preferred alternative (let's build a bridge, a ferry would be too hard to operate during floods); and then implemented it (let's meet every Saturday to build the bridge until it is done).

To a European this was outrageous. In Europe, only the aristocracy could define a problem; only university scholars could offer solutions; and only the king could pick a solution and implement it. In America, the people defined the problem, defined the solution, and then implemented the solution themselves! This grassroots approach to solving transportation problems is our 19th century heritage.



American Road Building Eras

The 20th Century: Increasing Specialization and Federalization

- Eisenhower & the Autobahn
- US Routes and Parkways
- Interstate Highways
- NEPA
- ISTEA
- 1900s began and ended as multimodal



Shots of 1919 Transcontinental Motor Convoy
from Eisenhower's collection



Historic US Route 66

But roads built by amateurs were not consistently usable. Bridges washed out, embankments failed. America needed a better, more scientific understanding of what made a good road.

Many of the nation's roads were poor, and by the turn of the 20th century, America wanted to "GET OUT OF THE MUD." In 1919, Dwight David Eisenhower, led a convoy of army trucks and troops across the country. At 62 days and an average speed of 5 miles an hour, the convoy demonstrated the need for improved highways. Local and state initiatives created highway commissions and legislators passed financing packages. Soon many states were paving their main highways. By the 1920s Americans owned 8 million cars, one for every four families. The federal government began studying what worked and what didn't, and applied the new principles to roads in the National Park System during the Great Depression.

These roads became the best *engineered* roads in the world. Even the Nazi government in Germany took notice and translated—literally—the standards for park roads in America to a new type of highway being constructed in Germany, the Autobahn. Eisenhower was impressed with the Autobahn, especially how, compared to rail transportation, it resisted bombing. When Eisenhower became President, he dedicated his administration to creating the Interstate Highway System of controlled-access freeways.

These new freeways, built to standardized dimensions, were oblivious to their surroundings. Citizen reaction came quickly and many planned freeways were stopped by courts. In order to get the consent of the plaintiffs to build freeways, many DOTs were required by the courts to include extensive, expensive mitigation and enhancement measures.



American Road Building Eras

The 21st Century: The Return of Participatory Design

Thinking Beyond the Pavement

- A 1998 workshop sponsored by Maryland DOT and FHWA
- Introduces the term *Context Sensitive Design*
- Results in the selection of five pilot states (actually six pilot agencies)



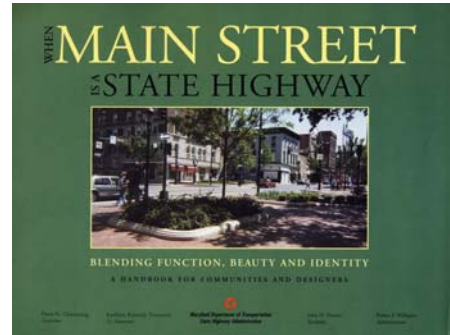
The passage of the highway funding bill in 1992 called ISTEA was instrumental in realigning how roads would be designed in this country. ISTEA, coupled with a pivotal paradigm-shifting 1998 conference, *Thinking Beyond the Pavement*, created the momentum for a consortium of states to try a new way of developing highways: Context Sensitive Design or CSD.



The History of CSS

Pilot States and Agencies

- Connecticut DOT
- Kentucky DOT
- Maryland DOT
- Minnesota DOT
- Utah DOT
- FHWA Eastern Federal Lands



With the whole nation watching, five states and one federal highway design agency were asked to test the principles of CSD by incorporating them into their design processes. Some produced training sessions, some teaching guides, some manuals related to specific problems.

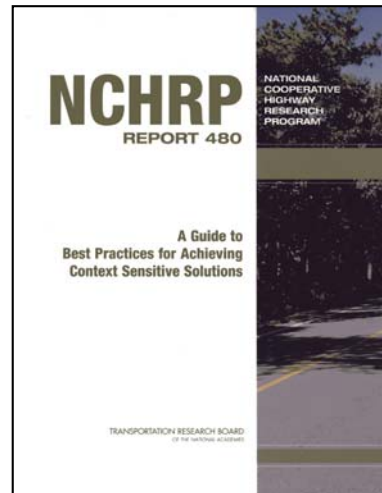
The Maryland DOT manual, *When Main Street is a State Highway*, is reviewed in Appendix A.



The History of CSS

TRB Best Practices Study

*A Guide to Best Practices
for Achieving Context
Sensitive Solutions*



Published 2003

At the end of five years, the Transportation Research Board (TRB) issued its report on effectiveness of CSD practices in the pilot states, illustrating the application of CSD through the use of case studies. TRB concludes that CSD had been effective and encouraged its adoption by other states.

The TRB/NCHRP Best Practices Study provides another set of good CSS case studies, augmenting those in Appendix B.

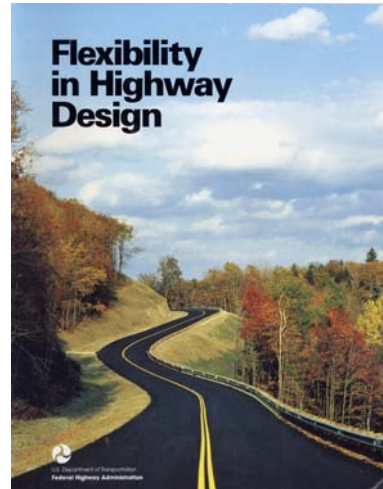
NCHRP Report 480, *A Guide to Best Practices for Achieving Context Sensitive Solutions*, is reviewed in Appendix A.



The History of CSS

FHWA Implementation

Flexibility in Highway Design



Published 1997

While the pilot states were beginning their exploration of CSD, the FHWA issued guidance suggesting that more flexibility can be found when applying AASHTO standards to highway design than has typically been used. This is extremely helpful for the pilot states and others beginning to use CSD.

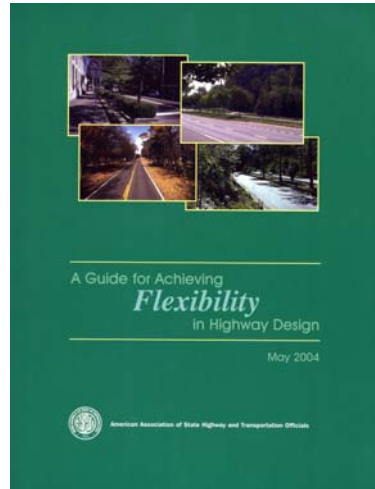
The FHWA guide, *Flexibility in Highway Design*, is reviewed in Appendix A.



The History of CSS

AASHTO Bridging Document

*A Guide for Achieving Flexibility
in Highway Design*



Published 2004

As more states adopt CSS, AASHTO publishes its bridging document outlining how best to utilize design flexibility. This publication, produced by the AASHTO committee directed by MDOT engineer Win Stebbins (a member of the MDOT's CSS Committee), is an important document because it explains how a designer can find and use the flexibility that is inherent in AASHTO's *Green Book*, the highway designer's bible.

The AASHTO book, *A Guide for Achieving Flexibility in Highway Design*, is reviewed in Appendix A.



The History of CSS

CSS in Michigan

- Governor's Executive Directive December 2003
- Transportation Commission Policy May 2005
- Training 2005 →
- Draft Implementation Plan 2005 →



In Michigan, progress has paralleled the national effort, with Governor Jennifer Granholm issuing an Executive Directive in December 2003, mandating MDOT to follow the principles of CSS. Subsequently, in December 2004, MDOT issued a Draft CSS Implementation Plan, followed in May 2005 by a CSS Policy from the State Transportation Commission.

The final MDOT CSS Implementation Plan is expected to be announced soon and will be available in Appendix D when complete. Currently, the complete text of the draft CSS Implementation Plan, the CSS Policy of the State Transportation Commission, and the Governor's Executive Directive are available online in Appendix D.



Conclusion

- Historical Precedence
- Fits American Culture
- Fits Michigan Society
- Field Tested



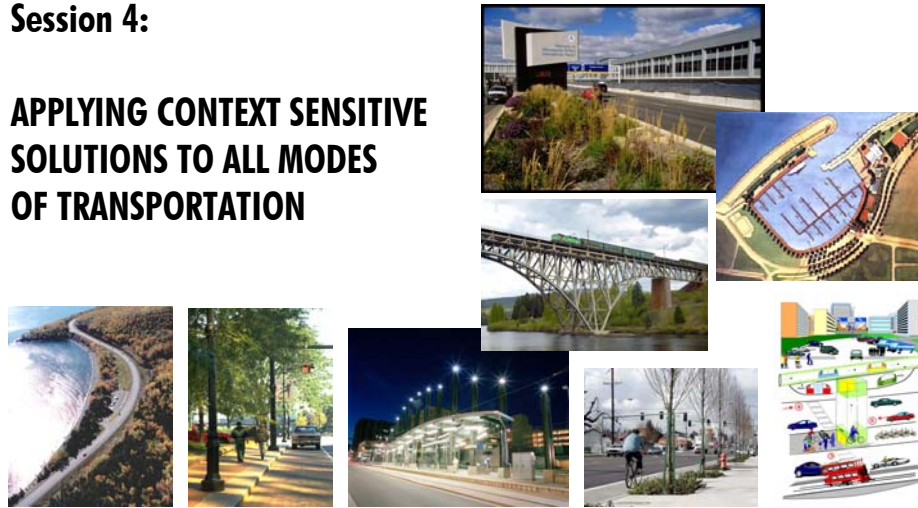
US-2 Cut River Bridge, MI

The history of road building in America has come full circle. With CSS, it is a participatory activity again, just as it was in the 19th century. The difference is that now, road building is also imbued with the scientific rigor of the 20th century. CSS marries our grassroots populist heritage with our no-nonsense scientific know-how to give us a new way of building transportation facilities. CSS has historical precedence; it fits our culture and Michigan society. It has been field-tested by several states and organizations for several years. MDOT will continue to identify the lessons it has learned and will continue to incorporate its findings into its CSS policies and practices, tailoring them to the needs of Michigan.



Session 4:

APPLYING CONTEXT SENSITIVE SOLUTIONS TO ALL MODES OF TRANSPORTATION



Welcome to the last of the overview sessions. This is a fairly easy session to grasp: CSS applies to all modes of transportation. No exceptions.

Highways have always gotten star billing. They were the first mode to practice CSS principles (remember the first national conference in Maryland was called, “Thinking Beyond the Pavement”) and therefore are a major source for CSS examples.

Nonetheless, CSS can apply to other modes as well: pedestrians, bicyclists, and transit are obvious. CSS also can be applied to passenger and freight railroads, harbors, and even airports. Indeed, in Michigan, airports are in the forefront of applying CSS practices, particularly to the aesthetics of terminals.



CSS and Transportation Modes

- Highways
 - Urban or rural
 - Free access or controlled access
 - Two-lane or multiple lanes



Columbia River Gorge Scenic Byway, OR

CSS was initially developed out of a concern about the relationship between highways and their context. That is why so many CSS case studies are about highways, particularly urban freeways and wilderness roads—places where the social or environmental context impinged on the ability of highway designers to use standard concepts and forms.

Highways can be urban or rural; free or controlled-access; or have two-lanes or multiple lanes. There are many ways by which a highway can be defined. Regardless of definition, MDOT wants the principles of CSS applied to the planning, design, construction, maintenance, and operation of any highway in Michigan.

For new construction, planning the alignment would be a significant CSS issue. How the facility would fit the character of the existing town or landscape would be issues needing resolution during design. Disruptions caused by construction, maintenance, or operations would need to be managed, using CSS methods, to the satisfaction of the affected population.



CSS and Transportation Modes

- Pedestrians
 - Sidewalks
 - Trails



Cincinnati, OH

Issues that may be best solved using CSS methods for pedestrians include system continuity concerns during the planning phase. During design, CSS may consider

- location of sidewalk or trail
- sidewalk width
- sidewalk location and width on bridges
- placement of obstacles (such as signs and lights) in sidewalk right-of-way
- pedestrian lighting, marking and signaling crossing
- curb cut orientation
- the use of bump-outs and islands to reduce crossing distance
- pedestrian amenities such as benches and kiosks
- ornamental railings on bridges
- pavement materials and patterns

During construction, CSS will come into play when considering how to maintain pedestrian access. During maintenance and operations, CSS methods will inform the best ways to continue to provide a safe walking surface.



CSS and Transportation Modes

- Bicycling
 - Shared roads
 - Off-road trails
 - Transit coordination



Lansing, MI

Issues for incorporating bicycling into the multi-modal mix that may be best solved using CSS methods:

- During planning, an analysis of system location and continuity, especially in relationship to large trip generators such as college campuses or commercial or recreational destinations.
- During design, the width of designated lanes, their exclusivity (are they shared with vehicles or pedestrians?), pavement surface type, and lane markings.
- During construction, detours and access to destinations
- During operations and maintenance, a CSS approach could be used to determine how best to keep the lanes clear of sand, leaves, and snow.

In one TSC in the UP, not only were bicycles routes planned, designed, and constructed in coordination with local units of government, but maintenance included the removal of winter sand, particularly from intersections where trails and roads crossed. Here, sand would naturally build up, posing a hazard to bicyclists attempting to stop or turn. So, to improve operations and bicycle safety, the TSC routinely removes sand from bicycle trails.



CSS and Transportation Modes

- Transit
 - Bus
 - LRT
 - Commuter rail



LRT station, Minneapolis, MN

For transit, CSS should be used during the planning process to determine the modes of transit needed by the community, the location of routes, stations, park-and-ride facilities, and major transfer hubs.

During design, the location of stops, the architectural character of stops and the amenities provided at stops could be determined by a CSS process. During operations and maintenance, scheduling, safety, and cleanliness issues typically dominate the discussion.



CSS and Transportation Modes

- Rail
 - Intercity passenger
 - Freight
 - Intermodal



Transit-oriented development Anoka, MN



Similar to transit and airports, a CSS approach could be used to resolve several issues for the planning, design, construction, operations, and maintenance of passenger rail, particularly:

- Locating the system of routes
- Location of stations
- The architectural character of the stations
- The design of the linkages to parking lots, rental car facilities
- How do people move between a rail station and the core commercial centers in a region?

Construction issues would be like those for highways and resolved using CSS in a similar manner. Operational and maintenance issues needing a CSS approach would be similar to those issues related to transit.

Utilizing CSS during the planning and design of rail-freight facilities that operate 24 hours a day, especially inter-modal facilities, would be critical for neighbors. This can be especially difficult when working with private railroad companies. Defining traffic patterns, lighting schemes, and noise mitigation would be central issues needing resolution.



CSS and Transportation Modes

- Airports
 - Airside
 - Landside



Cherry Capital Airport, Traverse City, MI

Planning new or expanded airports is a major issue that could be helped by a CSS approach. During design, the orientation of travelers from commercial cores to the airport and the design of an airport's entrance — especially its ability to orient stressed travelers to the right destination — is critical and would benefit from a CSS approach. CSS could also be employed in determining flight paths and schedules, noise mitigation, and solutions to other disruptions caused by modern airports to adjacent neighborhoods and businesses.



CSS and Transportation Modes

- Water
 - Harbors
 - Marinas
 - Landings



CSS can also be applied during the planning, design, construction, maintenance, and operation of harbors, marinas and ferry landings. During planning, location would be a significant CSS issue. How the facility would fit the fabric and character of the existing town or landscape would be issues needing resolution during design. Disruptions caused by construction, maintenance, and operations would need to be managed to the satisfaction of the affected population using CSS methods.



Conclusion

- MDOT employs elements of CSS in all transportation modes
- Applying a CSS approach is appropriate for all transportation modes
- Applying a CSS approach is appropriate for each project
- Public appreciates MDOT successes



Detroit, MI

In conclusion, there is no mode of transportation that cannot benefit from a CSS approach to its planning, designing, constructing, maintenance, or operations. All modes should use a CSS approach.

**Session 5:****CONTEXT SENSITIVE SOLUTIONS
AND THE NATIONAL
ENVIRONMENTAL POLICY ACT (NEPA)**

You have now finished the four overview sessions that introduced this training program and the main concepts of CSS. The next four sessions are about federal and state policies and how they relate to CSS.

One of the major federal policies that effects the development of transportation projects is the National Environmental Policy Act or NEPA (pronounced “knee-pa.”) This session isn’t about the intricacies of NEPA, but about how NEPA and CSS are compatible processes for developing transportation projects. (For those of you interested in understanding NEPA better, MDOT does offer a separate NEPA training course.)

In order to understand the relationship between NEPA and CSS, it is first necessary to know several key terms, including:

- Environment
- Environmental impacts
- Adverse and beneficial impacts
- Alternatives
- The preferred alternative



Understanding Environmental Issues

What is the environment?

- Natural and built environments
- Social, economic, environmental
- Specific protected resources



The American public has repeatedly indicated that environmental issues are top political, economic, and social concerns. Changes to the existing environment are frequently resisted, with the public requesting an assessment of the impact that a particular government action, such as reconstructing a highway, may have on the environment.

But what do we mean by the word *environment*?

From both a NEPA and a CSS perspective, the environment is composed of natural and built components (the “nouns”) that make up our surroundings. Real plants, real animals, real neighborhoods.

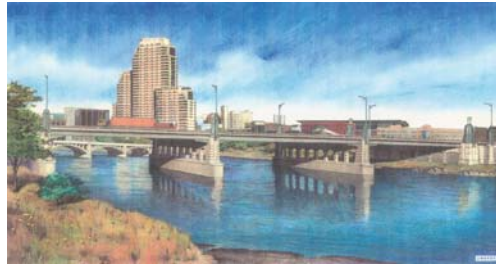
It is also the social, economic, and ecological systems, the interactions between components (the verbs, so to speak). Real animals eating real plants in real woodlands behind your house.

It is also composed of specific resources that have been determined to deserve special legal protection, by either the executive or legislative branches of government, federal or state. For example, federal and state agencies protect endangered plants and animals, conserve ecological communities such as wetlands, and protect historic sties such as Henry Ford’s Fair Lane Estate.



**Natural Environment
+ Cultural Environment
= Context**

The natural and cultural landscapes adjacent to the highway are the context of the transportation project.



US-131, Grand Rapids, MI

Together the natural and cultural environments form the context in which the transportation system exists. Understanding the resources that make up the natural and cultural environments is crucial to responding appropriately to a highway's context.



Natural Environment
+ Cultural Environment
+ People
= Value of the Context

What people value is critical to determining what needs to be considered as part of the transportation project.



US-131, Grand Rapids, MI

Context is another word for *environment*. Traditionally, CSS practitioners have considered context to be a simple equation: the natural environment plus the cultural environment equals the context of a highway. This is an objective or professional way to view the world. It is not necessarily how the public views context, however. The public adds its own values: what it likes and dislikes about the natural and cultural environment. What people like will need to be preserved, even enhanced, and what they don't like may be removed, improved, or screened from view. What neighbors and travelers value is critical to determining what needs to be considered as part of a transportation project.



**“There are many landscapes
without highways.
There are no highways
without landscapes.”**

- Lynn Lynwood, ASLA
MDOT Landscape Architect



I-94, St. Paul, MN

It is easy to imagine a landscape without a highway. But it is impossible to imagine a highway without a surrounding landscape. Highways can only exist in an environmental context, in a landscape composed of natural and cultural resources. As planners and designers we must be as concerned about the quality of the surrounding landscape as we are about the quality of the road.

Watch a car commercial on TV. Advertisers know that a driver's experience cannot be divorced from the roadway's surroundings, so they purposefully display their vehicles in engaging, beautiful landscapes (with great music playing in the background).

If only all of our roads were in commercials. Or, considered another way, is the road you are planning, designing, or maintaining suitable for a car commercial?



Understanding Environmental Issues

What is an impact?

Any change in existing conditions

- Adverse or beneficial changes
- Major or minor changes
- Widespread or localized changes
- Long-term or short-term changes

Adverse impacts require avoidance, minimization, reduction, mitigation, or compensation



What is an impact? Any change in existing conditions is an impact. An impact is adverse if it worsens conditions, beneficial if it improves conditions. Some impacts are major, widespread, or long-lasting. Others are minor, localized, or of a short-duration. Some are significant; others are insignificant.

Agencies analyze the impacts that a proposed project may cause before it is built in order to give decision makers objective information to determine if a project will significantly affect — for better or worse — our quality of life.

If a significant adverse impact is anticipated, the NEPA process, which we will discuss shortly, requires the agency proposing the project to determine the best way to avoid, minimize, reduce, mitigate, or compensate for any harm that could be done to the environment or people before the project is allowed.

In practice, this means that an agency must consider multiple alternatives before selecting the preferred alternative



Understanding Environmental Issues

What is an alternative?

- No-build alternative
- Build alternatives
- Operational alternatives



There are three types of alternatives: (1) the no-build alternative, (2) the build alternative, and (3) the operational alternative.

A no-build alternative does not necessarily mean that there won't be any environmental changes. It only means that the changes will not be caused by the proposed project. Even if lanes aren't added to a bridge, for example, it may become more congested, resulting in increased air pollution. *No-build* does not mean *no impact*.

There can be more than one build alternative. Since these alternatives call for something to be built, some environmental change will occur and so must be evaluated in advance.

For transportation projects, in addition to build and no-build alternatives, a management or operational alternative often exists — a solution that utilizes the existing transportation infrastructure but regulates its use. For example, rather than have MDOT add new lanes to relieve congestion on a bridge, major employers in a community could decide to stagger employees' shifts, thus spreading out rush-hour over several hours rather than concentrating it in one 45-minute period. This solution would eliminate the need for a wider bridge. Operational alternatives like this are increasingly attractive in that they can significantly reduce costs. They usually require extensive stakeholder involvement, typical of projects that use a CSS process during planning and design.

Although NEPA requires an examination of all reasonable and practical alternatives, CSS asks which alternatives have the support of stakeholders. Typically only those alternatives with support move forward in a CSS process, narrowing the field of alternatives early in the project development process.



Understanding NEPA

- The National Environmental Policy Act of 1969
- Requires a review of impacts
- Requires a review of alternatives for major actions
- Applies to all federally funded projects



Ames Lake wetland restoration
St. Paul, MN

NEPA is the National Environmental Policy Act. It was passed by Congress and signed by President Nixon in 1969. It directs any agency spending federal money to conduct a review of the impacts that a proposed action would have on natural and cultural resources. NEPA is concerned with social, economic, and environmental impacts—how a project may affect the way we live, the way we earn our living, and our surroundings in general.

NEPA includes analyses of resources with specific legislative or executive protections, such as a Presidential Order protecting wetlands or a law passed by Congress and signed by the President protecting historic properties.

NEPA requires, at minimum, that two alternatives—build and no build—be examined to determine the best solution.



NEPA in MDOT

- **Categorical Exclusions (CE) - 90% of MDOT Work**
Projects not causing significant impacts
- **Environmental Assessments (EA) - 5% of MDOT Work**
Discovery process to explore impacts, which may be significant (EIS) or not significant (FONSI)
- **Environmental Impact Statements (EIS) - 5 % of MDOT Work**
Significant impacts expected from large and complex projects

Under NEPA, Category II projects have been predetermined to have no significant adverse impacts to the environment. If a project falls into this category (and nearly 90 percent of MDOT projects do) they have been categorically excluded from requiring an Environmental Impact Statement (EIS). Documentation is still required to verify the project's status, so it is still important to use the CSS process.

If it is unknown whether significant impacts will be created, NEPA considers a project to be in Category III, requiring a rather straightforward Environmental Assessment (EA) be completed. This process may determine that an EIS is necessary, or may conclude with a "Finding of No Significant Impact" or FONSI. Again, using the CSS method can accelerate the process by reducing the necessary review times.

If the work being proposed will cause significant impacts to the environment, it is a Category I project under NEPA. In this case, documentation and the required review is an extensive process called an Environmental Impact Statement (EIS), which employs CSS principles such as stakeholder involvement and evaluation of alternatives, as well as a thorough, objective accounting of potential impacts. Typically a draft EIS is distributed for public and agency review and comment. Less than 5% of all MDOT projects require an EIS. When an EIS is necessary, using a CSS process has been shown to expedite the environmental review.



CSS and NEPA: A Common Approach

- Requires collaborative and interdisciplinary teams
- Engages stakeholders
- Addresses and minimizes conflicts
- Employs transparent decision-making processes
- Balances mobility and safety with environmental issues



River Trail, Lansing, MI

A CSS approach to project development and the analysis and reporting of social, economic, and environmental impacts required by NEPA are complementary. The CSS process often generates information and provides coordination needed later by NEPA. Both NEPA and CSS require a collaborative, interdisciplinary team that engages stakeholders, which include the public, regulatory agency personnel, and transportation users. Both work to address and minimize conflicts through a transparent decision-making process. Both attempt to balance mobility and safety with our society's desire to protect and conserve cultural and natural resources.



CSS and NEPA: A Common Approach

MDOT examines a wide range of environmental concerns

- Social issues
- Cultural resources
- Wetlands and floodplains
- Stream, lakes, and drains
- Coastal zones
- Protected plants and animals
- Water quality
- Air quality
- Traffic noise
- Contaminated sites
- Parks and other protected properties



MDOT's environmental review thoroughly examines many issues and resources. These are just some of the issues that MDOT would analyze for a typical transportation project.



MDOT NEPA Staff

The MDOT Environmental Section has the skilled interdisciplinary team necessary to examine issues

- Historians and archaeologists
- Biologists and botanists
- Water quality specialists
- Social analysis specialists
- Noise and air quality specialists
- Contamination specialists
- Public involvement specialists



In order to thoroughly examine issues and analyze impacts to resources, MDOT has a skilled interdisciplinary team of environmental specialists within the department. These specialists conduct investigations, evaluate impacts and alternatives, and produce the required environmental documentation. They work directly with the staff developing the project and with regulatory agencies that oversee MDOT activities.



MDOT NEPA Regional Staff

The role of the Regional Environmental Coordinator

- A liaison assigned to each MDOT Region
- A communication channel to MDOT environmental specialists
- Facilitates environmental clearances



In order to facilitate communication between the MDOT project staff and the MDOT staff writing the environmental documents, MDOT has created the position called Regional Environmental Coordinator. The coordinator acts as a two-way channel of communication between MDOT designers and environmental specialists. Environmental Coordinators work directly with their counterparts in regulatory agencies. Establishing trust and strong working relationships with project designers, environmental specialists, and regulatory staff helps to facilitate efficient processing of environmental documents and the required permits and clearances.



Conclusion

NEPA and CSS complement each other to plan, develop, and deliver transportation projects that benefit both communities and the natural environment.



NEPA requirements and CSS principles complement each other. It is good project management, therefore, to fully integrate NEPA requirements into the CSS process.



Session 6:

MDOT CONTEXT SENSITIVE SOLUTIONS POLICY AND PROCEDURES



This session, starting with the governor's Executive Directive on CSD, followed by the State Transportation Commission policy on CSS, and culminating in an MDOT Implementation Plan for CSS, is a set of cascading policy announcements, documented in one location to reinforce the message that every employee in MDOT should practice CSS in all its projects.



Governor's Executive Directive

No. 2003 – 25, dated Dec. 23, 2003 titled:
**Context Sensitive Design for
Transportation Projects**



Defines CSS as:

“A collaborative, interdisciplinary approach involving stakeholders for the development of a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility.”

A clear and direct definition of Context Sensitive Design is provided within the governor's directive:

“Context Sensitive Design means a collaborative, interdisciplinary approach involving stakeholders for the development of a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility”.

It is the same definition of CSS adopted by the FHWA.

The phrase “collaborative, interdisciplinary approach” indicates the need for an interdisciplinary team to develop a project. “Involving stakeholders” indicates the importance of public involvement, while the list of resources expresses the need to consider the project's context.

The directive's language makes clear that the state's responsibility to provide *safety and mobility* is still paramount.

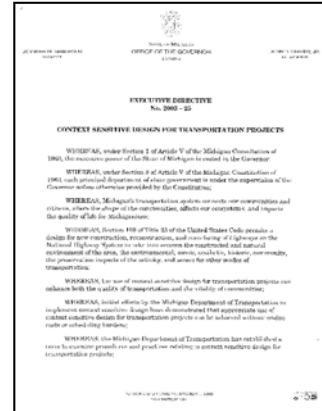


Governor's Executive Directive



Recognizes:

- Importance of transportation systems
- Section 109 of Title 23 of the US Code
- Enhancement opportunities
- Achievable without undue costs



The Governor's Executive Directive also recognizes that the State of Michigan takes seriously the role that transportation systems play in connecting communities and citizens, altering the shape of communities, affecting ecosystems, and generally impacting the quality of life for the people of Michigan.

The Directive also understands that MDOT must continue to operate within the legal constraints of US Code, Section 109 of Title 23.

The Directive recognizes that existing programs such as Transportation Enhancements can be utilized to fulfill the promise of CSS.

It concludes that projects utilizing CSS will improve the quality of transportation and the vitality of communities, and that projects incorporating CSS must be realized without delaying implementation or raising the cost of supplying transportation services to the people of Michigan.



Governor's Executive Directive



Directs MDOT to:

- Incorporate CSS into projects
- Encourage and institutionalize CSS
- Create educational programs
- Expand tools for use with CSS
- Prepare Guiding Principles
- Invite participation by various groups to contribute in the development of policies



Merrick Street Bridge, Adrian, MI

MDOT is required by this Executive Directive to facilitate the application of CSS through a number of methods. These include: incorporating CSS into projects when feasible; encouraging and institutionalizing CSS; creating educational programs; expanding tools necessary to successfully apply and illustrate CSS; develop policies, procedures, criteria, and guidelines for CSS; developing partnering relationships; and establishing communication strategies.

NOTE: Although the Governor's original directive uses the term *Context Sensitive Design* or *CSD*, it has, by agreement, been translated to mean *Context Sensitive Solutions* or *CSS*.



Transportation Commission Policy

Context Sensitive Solutions
Adopted May 25, 2005

[illegible]


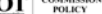





































Per the requirements set forth in the Executive Directive, the State Transportation Commission established a policy for applying CSS throughout MDOT (“Context Sensitive Solutions,” dated May 25, 2005). This document officially changed the name of this design approach from *Context Sensitive Design* to *Context Sensitive Solutions*.



Transportation Commission Policy

- Recognizes Governor's Directive
- Pursues a CSS process consistent with MDOT mission of providing mobility and safety
- Promotes partnerships
- Early in planning considers integrated transportation options
- Uses flexibility within design standards



This one-page policy begins by recognizing the Executive Directive, specifically by stating the definition of CSD. It further states the position and actions to be taken by the department, as:

“The Michigan Department of Transportation (MDOT) will pursue a proactive, consistent and Context Sensitive Solutions (CSS) process in keeping with its mission to provide the highest quality integrated transportation services for economic benefit and improved quality of life. A successful CSS program will require mutual commitment on the part of both transportation agencies and stakeholders to identify appropriate opportunities to plan, develop, construct, operate and maintain infrastructure in accordance with CSS principles without undue costs or scheduling burdens.”

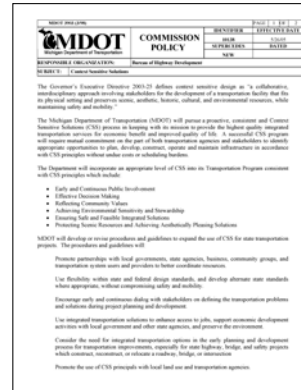
Please note that there is no new money being allocated to implement CSS.



Transportation Commission Policy

Incorporates CSS into MDOT's transportation Program consistent with CSS principles:

- Early and continuous public involvement
- Effective decision making
- Reflecting community values
- Achieving environmental stewardship
- Ensuring safe and feasible integrated solutions
- Protecting scenic resources
- Achieving aesthetically pleasing solutions



This MDOT Commission Policy recognizes the principles of CSS and directs the Bureau of Highway Development to facilitate a program that incorporates an appropriate level of CSS into its transportation program, consistent with the following principles:

1. Early and continuous public involvement
2. Effective decision making
3. Reflecting community values
4. Achieving environmental sensitivity and stewardship
5. Ensuring safe and feasible integrated solutions
6. Protecting scenic resources
7. Achieving aesthetically pleasing solutions



Implementation Plan



Draft MDOT Implementation Plan

Dated December 13, 2004, titled:

"Context Sensitive Solutions"

Recommendations drafted by the MDOT CSS Team using input from over 60 stakeholder organizations



Mackinac Bridge, MI

Further definition of the CSS approach is provided within the MDOT Context Sensitive Solutions Draft Implementation Plan. This plan, dated December 13, 2004, is a work in progress. As a draft, it provides a number of recommendations. More than 60 stakeholder organizations participated in a process and provided input to the CSS Design Team in developing these recommendations.



Implementation Plan

List of Recommendations:

- Partnering
- Public engagement
- Flexibility in design
- Education
- Mobility
- Corridor approach
- Transition plan
- Measurements



Eight recommendations are identified within this Draft Implementation Plan, guiding the department to develop or revise procedures and guidelines to expand CSS for transportation projects. These recommendations include:

1. Partnering to improve interagency cooperation
2. Public engagement to ensure appropriate stakeholder involvement
3. Flexibility in design so the most appropriate solution can be selected even if it is not the standard solution
4. Education of MDOT staff and stakeholders on the principles of CSS
5. Mobility, a fundamental need of society, will be ensured
6. A corridor approach, rather than a single project, will be considered
7. A transition plan will outline how projects already in production will incorporate CSS principles
8. Measurements for determining the success of CSS will be identified



Conclusion

MDOT is committed to implementing CSS throughout its organization as required by the Governor's Executive Directive and Transportation Commission Policy.



In conclusion, MDOT has embraced the directive from the Governor to advance the design and implementation of transportation projects utilizing the CSS process. Successful implementation of CSS requires commitment from the entire organization. The CSS policy outlined by the State Transportation Commission and the draft Implementation Plan prepared by MDOT, clearly indicates MDOT's commitment to implementing CSS.

CSS is not something that is easily adopted. It requires several deep modifications in the way Departments of Transportation have traditionally conducted their business. Incorporating CSS into MDOT will mean that MDOT must become a *learning organization*, systematically searching out the lessons it learns as it begins to apply CSS to all of its planning, design, construction, operations, and maintenance across the state and for all modes of transportation. It means that it will always, as an organization, strive to apply those lessons in an effort to improve its implementation of CSS.

**Session 7:****CONTEXT SENSITIVE SOLUTIONS
AND MDOT HIGHWAY
PROJECT CATEGORIES**

M-119, Emmet County, MI

This session also has a very simple message: CSS can be applied to all categories of highway projects.

In Session 5 we reviewed how the National Environmental Policy Act (NEPA) and CSS were comparable processes. We noted that 90% of all MDOT projects were categorically excluded from requiring an Environmental Impact Statement as part of the project development process. Most categorical exclusions are either 3R projects or 4R projects on existing alignment. These types of projects typically preserve an existing transportation function.

Let's examine how CSS relates to these types of projects.



MDOT 3R Projects

Resurfacing, Restoration,
Rehabilitation

- Preserves a transportation function
- Improves mobility, safety, capacity
- Alternatives more constrained
- Mitigating impacts more constrained
- Design flexibility required
- CSS is beneficial



US-23 drawbridge, Cheboygan, MI

Nearly 80% of the projects in Michigan are 3R projects, either resurfacing, restoration, or rehabilitation. 3R projects typically preserve an existing transportation function. They can improve mobility, safety, or capacity. Since it is an existing facility, alternatives are usually very constrained and it is difficult to mitigate adverse impacts. Utilizing design flexibility gives designers more latitude in arriving at a context-sensitive solution.

3R projects can occur anywhere on Michigan's highway system. They can be part of the National Highway System or not. On NHS routes they can be on limited access routes (freeways) or free access routes (non-freeways) in either urban or rural locations. For Non-NHS routes, only free access (non-freeway) routes are considered in both urban and rural locations.

Typical 3R projects include resurfacing; widening lanes or shoulders; adding passing lanes; making minor realignments and minor changes to profile; improving traffic operations and safety; establishing minor roadside facilities; and rehabilitating bridges.



MDOT 4R Projects

Reconstruction
on Existing Alignment
Original Construction
on New Alignment

- Improves mobility, safety, capacity
- Adds a transportation function
- Alternatives less constrained
- Mitigating impacts less constrained
- Design flexibility required less often
- CSS is beneficial



TH 61 Scenic Byway, MN



I-94/US-24 Wayne County, MI

New construction or significant reconstruction are considered 4R projects, few of which are undertaken annually in Michigan. 4R projects generally add a new transportation function, or greatly improve mobility, safety, and capacity. Typical 4R projects include new routes, new alignments or profiles of old routes, adding lanes with additional right-of-way, creating new interchanges, and significantly changing the access an existing facility. New bridge projects are typically 4R.

Alternatives for 4R projects are typically less constrained than for 3R projects, and mitigating adverse impacts is easier. With a 3R project, occurring within an existing right of way, designers may have only a matter inches in which to accommodate transportation improvements. With a 4R project, on the other hand, more space typically means more options. For example, a road with bike lane that barely fits into a tight downtown corridor instead may be located north or south of town.

When a 4R project is occurring on an existing alignment, however, constraints will be similar to those of 3R projects

4R projects can occur anywhere on Michigan's highway system, either part of the National Highway System or not. On NHS routes they can be on limited access routes (freeways) or free access routes (non-freeways) in either urban or rural locations.

Although design flexibility may be required less often with 4R projects, it is still an important tool for the designer.



Conclusion

CSS Must Be Applied To All Highway Project Types:

- 3R and 4R
- NHS and Non-NHS
- Limited Access and Free Access
- Urban and Rural Settings



CSAH 21, Washington County, MN



US-10 at Eastman Road, Midland, MI

In Michigan, CSS will be applied to all project types, both 3R and 4R. It will be applied to both NHS routes and non-NHS routes. Both limited access highways and free access highways will use CSS principles in both urban and rural settings. It will be used everywhere, on any type of project.

The tradeoffs inherent in a 3R project are much more exacting than on a 4R project. On a 3R project, feet and inches matter. Design flexibility is crucial. To avoid a problem on 4R projects, it may be possible to simply move the alignment a couple hundred feet. Although design flexibility may still be useful, it may not be as necessary.

**Session 8:****CONTEXT SENSITIVE SOLUTIONS
DESIGN FLEXIBILITY
AND TORT LIABILITY**

This session addresses what is often a major concern of individuals practicing CSS: How is my exposure to tort liability altered when I use CSS and don't apply traditional design standards to my designs?

To answer this question, let's first ask, What is a design standard? And then, "What is design flexibility?"



Design Flexibility

Introduction

National standards dependent on local design factors such as:

- Roadway classification
- Terrain
- Traffic volumes
- Traffic composition



Okemos, MI

MDOT Design Standards are typically based on the national design standards listed in the AASHTO *Green Book*. These standards have been modified by MDOT to fit the particular geographic and environmental considerations specific to Michigan. The evolution of design standards both nationally and in Michigan has resulted in the development of design flexibility, which is conducive to implementing context sensitive solutions.

Design standards depend on several design controls, such as a roadway's functional classification, the type of construction proposed, the terrain the road will traverse, adjacent land uses, and volume and composition of traffic. However, design standards are typically expressed as ranges based on these design controls, not as a single dimension. It is the range that allows for flexibility.

Although a DOT historically may have selected the most conservative end of a particular range (say, always the widest recommended dimension for a travel lane or shoulder), it is not required to do so. Any dimension within the range is considered appropriate. Many times we have flexibility, but just have elected not to use it. So when practicing CSS, first check to see what sort of flexibility is available within a given design standard.

The second way of finding flexibility is to ask if the design controls being applied to a particular road are correct. For example, is the road correctly classified? Is it still an arterial or has it become a collector due to changes in land use or expansion of alternate routes? Making sure that the design controls are correct will ensure an appropriate amount of flexibility.

When a particular design standard cannot be met, a formal exception may be pursued. Situations that may require design exceptions should be identified during the scoping process so that all options can be considered prior to the submission of a formal design exception request.

Design exceptions should be considered a last resort; CSS is not about racking up design exceptions. On the contrary, CSS is meant to give a designer sufficient flexibility to design without resorting to exceptions.

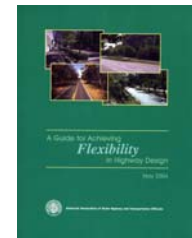


Design Flexibility

AASHTO Guidelines

Several AASHTO publications are useful to a CSS designer including:

- *A Policy on Geometric Design of Highways and Streets (Green Book)*
- *A Guide for Achieving Flexibility in Highway Design*
- *A Guide for the Development of Bicycle Facilities*



National guidance for highway design is provided in several publications by the American Association of State Highway and Transportation Officials (AASHTO). The most often referenced of AASHTO's publications is *A Policy on Geometric Design of Highways and Streets*, commonly referred to as *The Green Book*.

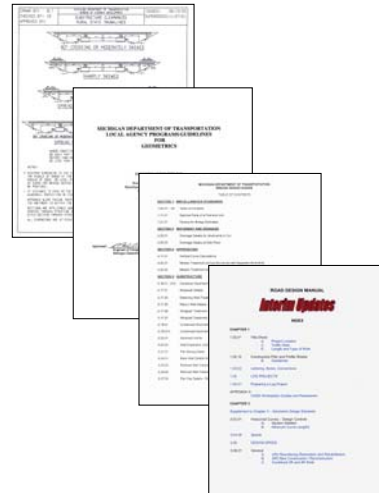
This publication is a series of guidelines on geometric design presented with recommended ranges of minimum and maximum design values. Within the Green Book is a range of solutions for almost any design situation. Historically MDOT has tended to use the most conservative values in these ranges. CSS suggests that community values and environmental constraints might warrant the use of other design values.



Design Flexibility

MDOT Design Standards

- MDOT Road and Bridge Standard Plans
- MDOT Bridge Design Guide
- MDOT Geometric Design Guide
- MDOT Road Design Manual
- MDOT Bridge Design Manual



The standards adopted by MDOT for interstate and state highways are incorporated in several Department publications:

- The MDOT Road and Bridge Standard Plans include detailed drawings approved by the Department and FHWA for repeated use on road and bridge construction projects. They provide detailed technical information for use in both the design and construction of highways and highway appurtenances.
- The MDOT Bridge Design Guides provide detailed drawings for bridge designs that are not subject to the same formal approvals as standard plans. Although some MDOT standards are incorporated in the details, these drawings primarily serve as an aid for designing and detailing bridges.
- The MDOT Road Design Manual and Bridge Design Manual provide both technical and procedural information to assist the designer throughout the design process for road and bridge projects. The Michigan standards for controlling design elements are included in these two publications.

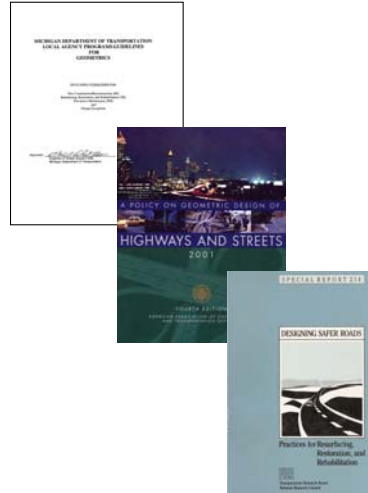
Historically MDOT has tended to use the most conservative design values expressed in these manuals. CSS suggests that community values and environmental constraints might warrant the use of other design values.



Design Flexibility

Local Agency Standards

- MDOT Local Agency Program Guidelines for Geometrics
- AASHTO Green Book (3R/4R Projects)
- TRB Report 214, *Designing Safer Roads: Practices for Resurfacing, Restoration and Rehabilitation* (3R Projects)



The standards used by Local Agency Programs are listed in the “Michigan Department of Transportation Local Agency Program Guidelines for Geometrics.” This document utilizes the MDOT 4R/3R standards as a baseline with a more detailed commentary on certain requirements and added features specific to local agency projects. The basic premise for Local Agency 4R standards is the AASHTO Green Book. Local Agency 3R standards are derived from the Transportation Research Board (TRB) Report 214, *Designing Safer Roads: Practices for Resurfacing, Restoration and Rehabilitation*. As with MDOT projects, design exceptions should be identified during the scoping process so that all options can be considered prior to submitting a formal design exception request.

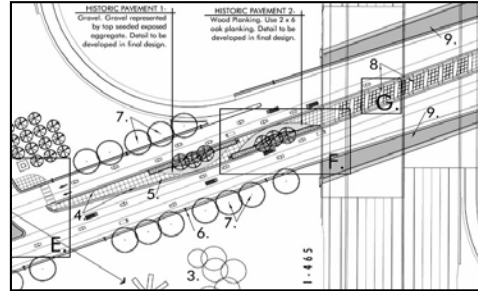
Again, CSS suggests that community values and environmental constraints might warrant the use of other design values.



Design Flexibility

Design Exceptions

- Design speed
- Lane width
- Shoulder width
- Bridge width
- Structural capacity
- Horizontal alignment
- Vertical alignment
- Grade
- Stopping sight distance
- Cross slope
- Superelevation
- Vertical clearance
- Horizontal clearance (not including clear zone)
- Acceleration/deceleration ramp length



When design criteria cannot be met within the specified ranges, designs outside the range may be considered, though documentation (including crash analyses) must justify the alternative. The FHWA requires formal requests and documentation for design exceptions on the NHS for 13 specific controlling criteria:

- Design speed
- Lane width
- Shoulder width
- Bridge width
- Structural capacity
- Horizontal alignment
- Vertical alignment
- Grade
- Stopping sight distance
- Cross slope
- Superelevation
- Vertical clearance
- Horizontal clearance (not including clear zone)

An additional MDOT design exception requirement is added for freeway ramp taper lengths. These requirements are detailed in the MDOT Geometric Design Guides. On non-NHS routes, MDOT considers formal design exception requirements applicable for the same elements listed above. The design exception process is rigorous for all projects; contrary to rumor, CSS is not a “free pass” for garnering design exceptions.



Tort Liability

Input from State Attorney General's Office

- Project scoping and design
- Governmental immunity
- Previous opinions involving design

The Michigan Attorney General for Transportation has addressed the question of tort liability during project scoping and design. Based on answers previously received from the Office of Attorney General, MDOT employees involved in project scoping and design who use CSS principles and practices are exempt under Michigan's Immunity Rules. The Department is also immune.

For a more thorough explanation, please refer to Appendix D, where the complete text of a letter from the Office of the Attorney General is found.



Conclusion

- Design flexibility is available
- Practicing design flexibility is using good engineering judgment
- Practicing design flexibility will not increase MDOT or MDOT employees' exposure to liability as CSS is practiced.



M-119, Emmet County, MI

In conclusion, the flexibility available to MDOT designers allows transportation facilities to be designed in a context-sensitive manner. Utilizing design flexibility is an ethical and proper use of engineering judgment. Based on past opinion of the state Attorney General, it is anticipated that MDOT and its employees will not increase their exposure to tort liability by employing flexible design practices.



Session 9:

ROLES AND RESPONSIBILITIES OF MDOT LEADERSHIP



MDOT leadership has initiated and continues to support the implementation of CSS throughout the Department. The following slides list many of management's responsibilities for launching and successfully implementing CSS.



Organization

The MDOT Leadership Team:

Chief Administration Officer

- Bureau of Multimodal Transportation Director
- Bureau of Transportation Planning Director
- Bureau of Finance and Administration

Chief Operation Officer

- Bureau of Highway Development Director
- Bureau of Highway Delivery Director
- Region Engineers

Management must let all MDOT employees know that CSS is supported at the highest level of MDOT's organization.



Organization

Region and TSC Leadership

Region Engineer

- Associate Development Engineer
- Associate Delivery Engineer
- Regional Planner

TSC Manager

- Engineer of Development
- Engineer of Delivery

Management must let every MDOT employee know that its support for CSS extends through each regional office to the operation of every TSC.



Organization

Leadership Team:

- Directs CSS Implementation Plan
- Identifies and Sponsors Staff

Project Planning and Development Staff

- TSC/Region development engineers
- Planners and environmental specialists
- Scoping staff
- Project managers
- Designers
- Planning and design consultants
- Real estate

Delivery Staff

- TSC/Region delivery engineers
- Construction inspectors
- Traffic operations
- Direct Maintenance
- Contract Maintenance (by City and County staff)
- Consultants and contractors

In order to successfully implement the Department's CSS Policy, management will provide input and direction on the execution of the Department's CSS Implementation Plan. Management will also identify and sponsor staff throughout the Department who need introductory and advanced CSS training.



Implementation

- Establish the funding mechanism to provide the necessary training and materials



In order to implement CSS, training of MDOT staff members is necessary. Management will ensure that sufficient funds have been allocated for awareness and advanced CSS training as well as refresher courses.



Implementation

- Develop CSS Champions within MDOT to provide the ongoing resources and support, and to help ensure consistency of the approach.



Advanced training is necessary for MDOT staff members with positions of leadership as CSS Champions. These positions are vital to the implementation and long-term success of CSS. They offer resource and support to other MDOT staff members as well as ensure consistent application of the approach to all MDOT projects. Management is committed to creating a cadre of CSS Champions.



Implementation

- Establish procedures to identify stakeholders and their concerns during project scoping.



Management is committed to establishing procedures that will identify stakeholders and their concerns during project scoping. In particular, management will make sure that appropriate budgets are being allocated so CSS initiatives can be adequately funded.



Implementation

- Create an annual awards program to recognize outstanding achievement in the application of CSS to further encourage CSS in transportation.



In order to both reward and promote CSS as an integral component of design within MDOT, management is considering conducting yearly awards programs. Press releases, news articles and other methods of broadcast are being considered to further spread the word to the public about MDOT's commitment to a CSS approach.



Implementation

- Identify a timetable for implementation of CSS applications on current and future projects.

Project Activities	WPA	2002	2003	2004
Project on-boarding	all			
Identification	all			
Registration and test of field data	all			
Registration & calibration	all			
Calibration & validation	all			
Training and quality assurance	all			
Instrument set-up on field sites	all			
Field campaign	all			
Network samples collected	all			
Field data returned	all			
Inventory methods development	all			
Network structural analysis	all			
Parameterization using surrogate	all			
all the US highways and CSST	all			
activity of selected components	all			
activity of highway and CSST	all			
activity as function of component	all			
and further analysis	all			
Integration of all model	all			
Simulation of available data with 201	all			
model	all			
Construction of all model	all			
State of 201 model for preliminary	all			
production	all			
Parameter 201 model analysis	all			
Parameterization of final design	all			
Simulation of CSST analysis on current	all			
activity	all			
Simulation and regional analysis of	all			
activity effects on activity in 201	all			
activity and activity effects on activity	all			
Simulation of available network and	all			
activity data	all			
Simulation of available for field	all			
activity data	all			
Simulation results of the final model	all			
Simulation and calibration	all			
Simulation of final design	all			

Management is in the process of developing a CSS Implementation Plan, with an aggressive yet achievable schedule for training and implementation. It is anticipated that trial projects will be identified and included within this timetable.



Implementation

- Roll out the CSS training program to educate Department staff as part of the overall CSS implementation plan.



The CSS approach will be foreign to many staff members. Sufficient initial training to a wide cross-section of departments will help ensure at least a familiarity with (and hopefully an understanding of) MDOT's commitment to utilizing this design approach on all transportation projects.



Conclusion

- MDOT's Leadership Team is dedicated to the successful implementation of CSS on all transportation projects.



Blue Water Bridge, MI, between U.S. and Canada

Led by its management team, MDOT is dedicated to successfully implementing CSS on all transportation projects.



Session 10:

CONTEXT SENSITIVE SOLUTIONS IN TRANSPORTATION PLANNING



I-70 interchange, St Louis, MO

Planning is considered the first step in the CSS chain — or at least that is how we have been presenting the development of transportation projects, starting with planning, moving on to design, construction, operations, and maintenance. However, the process is not necessarily that linear. A person, or project, could start anywhere. It is actually a circular process, with operations and maintenance ideally offering feedback into planning.

Let's start with planning while recognizing that we didn't have to start there.



All Projects Contain Planning Elements

Planning is typically associated with big, complex projects where it is essential. But most MDOT projects are Categorical Exclusion projects, smaller and less complex.

Nonetheless, they contain the same planning elements, usually accomplished much more quickly with much less documentation, during initial scoping and design

In MDOT, planning is sometimes considered an activity only used for large, complex projects. However, it is also used on smaller, simpler projects. The planning steps for a large and a small project might be identical. We just tend to go through the steps more quickly on the small project, so quickly that sometimes we forget that planning occurred at all.

Since most MDOT projects are not large and complex, it is important to remind ourselves that planning is still critical. Small projects may require much less documentation and planning may only occur during the initial stages of scoping and design, but it is still crucial to integrating CSS into MDOT's project development process.



CSS and Planning Process

- **System Planning**
Integrated, Responsive, Multimodal
- **Program Development**
Priorities, Funding, Schedule
- **Individual Projects**
Scope, Coordination, Support

CSS is beneficial
during each activity



MDOT can integrate CSS into the planning process at three different levels:

1. The statewide system planning level
2. The regional transportation program development level
3. The corridor and project level

We can integrate CSS into the statewide system planning level by being responsive to stakeholders. Stakeholders' identified transportation needs can then be integrated into the overall vision, goals, and objectives for the state's transportation system. This piece of the process is especially important for determining system priorities and modal mixture.

MDOT will integrate CSS into the development of the regional transportation program by engaging stakeholders, particularly in identifying project partners, project funding, and project scheduling priorities within the region.

MDOT will incorporate the fundamental principles of CSS for each individual corridor and project through a program of extensive local public involvement that identifies a project's scope (both geographical and topical) and its concept (purpose and need).



CSS and Planning Tasks

- Identify Affected Environment
- Identify Affected Population
- Identify and Invite Stakeholders
- Identify Issues



During planning, MDOT will use CSS to identify four items:

1. The affected environment
2. The affected population
3. The stakeholders
4. The issues

The following four slides will examine each of these items separately.



CSS and Planning Tasks

Identify the Affected Environment

- Natural Landscape
- Cultural Landscape
- Transportation Corridor



M-22, Glen Arbor, MI

For transportation projects, the affected environment can be divided into three main categories, (1) the natural environment, (2) the cultural environment, and (3) the transportation corridor. The natural environment includes all of the elements found in the landscape not constructed by people, such as land form, water bodies, vegetation, and wildlife. The cultural environment includes all elements created by people, including buildings, other structures, and artifacts.

In the past, except for visual impacts, MDOT would not typically have considered the transportation corridor a part of the affected environment. However, it is quite possible, using the more thorough public involvement techniques of CSS, that the public or even regulatory agencies such as the State Historic Preservation Office, will find the transportation corridor itself a significant part of the cultural environment.

Although it is essentially part of the cultural environment, the transportation corridor is considered separately because MDOT exerts total control over it.